

Rec'd PCT/PTO 28 JAN 2005

REC'D 27 SEP 2004
WIPO PCT

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PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

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|---|---|---|
| Applicant's or agent's file reference F171922 | FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) | |
| International application No. PCT/US03/19887 | International filing date (day/month/year) 31 July 2003 (31.07.2003) | Priority date (day/month/year) 31 July 2002 (31.07.2002) |
| International Patent Classification (IPC) or national classification and IPC IPC(7): HO2P 5/34, 7/42 and US Cl.: 318/801,800 | | |
| Applicant SMC ELECTRICAL PRODUCTS, INC. | | |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of ___ sheets.

3. This report contains indications relating to the following items:
 - I ☒ Basis of the report
 - II ☐ Priority
 - III ☐ Non-establishment of report with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☒ Certain documents cited
 - VII ☒ Certain defects in the international application
 - VIII ☐ Certain observations on the international application

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|--|--|
| Date of submission of the demand 10 February 2004 (10.02.2004) | Date of completion of this report 07 July 2004 (07.07.2004) |
| Name and mailing address of the IPEA/US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703)305-3230 | Authorized officer Patrick Miller Telephone No. 703-306-3431 |

Form PCT/IPEA/409 (cover sheet)(July 1998)

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US03/19887

I. Basis of the report

1. With regard to the elements of the international application:*

- ☒ the international application as originally filed.
- ☒ the description:
pages 1-36 _____ as originally filed
pages NONE _____, filed with the demand
pages NONE _____, filed with the letter of _____.
- ☒ the claims:
pages 37-51 _____, as originally filed
pages NONE _____, as amended (together with any statement) under Article 19
pages NONE _____, filed with the demand
pages NONE _____, filed with the letter of _____.
- ☒ the drawings:
pages 1-41 _____, as originally filed
pages NONE _____, filed with the demand
pages NONE _____, filed with the letter of _____.
- ☐ the sequence listing part of the description:
pages NONE _____, as originally filed
pages NONE _____, filed with the demand
pages NONE _____, filed with the letter of _____.

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in printed form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages NONE
- ☐ the claims, Nos. NONE
- ☐ the drawings, sheets/fig NONE

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US03/19887**V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. STATEMENT**

| | | |
|-------------------------------|--------------------|-----|
| Novelty (N) | Claims <u>1-36</u> | YES |
| | Claims <u>NONE</u> | NO |
| Inventive Step (IS) | Claims <u>NONE</u> | YES |
| | Claims <u>NONE</u> | NO |
| Industrial Applicability (IA) | Claims <u>1-36</u> | YES |
| | Claims <u>NONE</u> | NO |

2. CITATIONS AND EXPLANATIONS

Claims 1-36 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest a motor drive system that has a two-level induction motor controller that outputs signals for a two-level inverter bridge, a multiple level inverter bridge with $N \geq 12$ switches, and generating N time-coordinated signals that control the N switches based on the output of the two-level induction motor controller.

Claims 1-36 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry. The motor drive system has industrial applicability because the drive system can be used to control motors used in the automotive industry.

----- NEW CITATIONS -----

US 5,355,297 A (Kawabata et al) 11 October 1994, see figure 7.
US 6,337,804 B1 (Kea et al) 08 January 2002, see figure 1.
US 5,621,628 A (Miyazaki et al) 15 April 1997, see figure 3.
US 4,953,069 A (Braun et al) 28 August 1990, see figure 1.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US03/19887

VI. Certain documents cited

1. Certain published documents (Rule 70.10)

| Application No <u>Patent No.</u> | Publication Date <u>(day/month/year)</u> | Filing Date <u>(day/month/year)</u> | Priority date (valid claim) <u>(day/month/year)</u> |
|-------------------------------------|---|--|--|
| US 6,480,403 B1 | 12 November 2002 (12.11.2002) | 27 July 2000 (27.07.2000) | None |

2. Non-written disclosures (Rule 70.9)

| <u>Kind of non-written disclosure</u> | Date of non-written disclosure <u>(day/month/year)</u> | Date of written disclosure referring to non-written disclosure <u>(day/month/year)</u> |
|---------------------------------------|---|--|
|---------------------------------------|---|--|

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US03/19887

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

Claims 1-36 contain minor informalities. For instance, claim 2 cites "a two-level inverter bridge" (line 5 of claim). Change "a" to "the" or "said." Also, claim 19 does not sufficiently define the variable N. For example N should be defined as " $N \geq 12$ and N is an integer." Please note, the claims contain additional informalities similar to the two examples described above.